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INVESTIGATION OF SKYLAB DATA

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Principal Investigations Management Office

Lyndon B. Johnson Space Center

Ryborn R. Kirby

Lester V. Manderscheid

Michigan State University

Monthly Plans and Progress Report

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Monthly Plans and Progress Report

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Attached is a summary report on the collection and organization of ground truth information.

Attached is the first assessment of S190-A imagery taken on June 1, 1973.

During November we learned that imagery originally scheduled for November delivery will be delayed. This delay necessitates revision in our work schedule and complicates our budgeting process. After checking with our sub-contractor, Environmental Research Institute of Michigan, and our team. I am planning on a final report seven months after delivery of final imagery--the same schedule that we originally agreed to. Such a schedule will be difficult to attain, especially if the sub-contractor has substantial amounts of other imagery to process at the same time. Clearly the June 30, 1974 date is now impossible.

Collection and Organization of Ground Truth Information for SKYLAB
Project on Economic Assessment of Crop Acreage in Michigan.

The basic ground truth information for the study was gathered during the summer of 1973. The main test strip for this project is located in Ingham Co., Mich. This strip is 18 miles long in the north-south direction, centered on Dietz Rd. It is 4 miles wide in the east-west direction, with 2 miles lying on either side of Dietz Rd. Moving south from the Shiawassee County line, the test strip extends through Locke, Leroy, and White Oak Townships. Ground cover information for the 1973 growing season was collected for the entire 72 square miles encompassed by this test strip.

Three sources of information were utilized in collecting these data. The first was the ASCS-USDA field certification records for Ingham Co. These were supplied as annotations on photocopies of enlarged black and white airphoto prints. Actual field visitation by technicians on the SKYLAB project constituted the second source of information, and included most fields that are accessible from roads or without violation of trespass laws. The third source of information was through photointerpretation of underflight imagery. This was used in cases where access to fields was restricted.

Each field, woodlot, or other vegetative unit was assigned a unique number for ease in recording and recalling information. The identifier is 7 digits in length including one decimal place, and is structured as follows working from left to right:

Township number - 1 digit
Section number - 2 digits
Field number within section - 3 digits
Subdivision of field - 1 decimal digit.

Each observation consisted of identifying the crop species or dominant natural vegetation with unusual conditions also being noted. Each observation is recorded by field number and date, with an asterisk being used to flag the photointerpretive observations. The observations were punched on cards to facilitate duplication and dissemination of information to the several investigators. A printout of this card file is attached.

Supplemental ground truth information was also collected in the ERTS test site in Eaton Co., Mich. since this area lies along an extension of the SKYLAB flight path. The Eaton Co. information was collected in June 1973 on a 4 by 5 mile strip having McConnell Rd. as the southern boundary and Cochran Rd. as the north-south bisector. Information on fields in this area came from field visitation and photointerpreted aircraft imagery. Additional information on all wheat and plowed fields was obtained in 5 by 2 mile strip immediately north of the above test area with Cochran Rd. as the bisector. This additional information was gathered for possible use in subresolution element analysis.

The ground truth collection discussed above was devoted entirely to determination of vegetative cover type, condition, and stage of development. Acreages are scaled either from ASCS black and white enlargements or from underflight imagery as needed.

Assessment of S-190A Imagery Taken on June 12, 1973 (SL-2) from the Standpoint of SKYLAB Project on Economic Assessment of Crop Acreage in Michigan.

Phenological conditions

Phenological conditions in Southern Michigan on June 12, 1973 were as follows:

Forests: Most species in full leaf;

Grasses: Green and several inches high, although some areas still show dead material from previous season over current year's green growth;

Small grains: Same stage as grasses;

Row crops: Many fields tilled, some of which were planted, but few of which had any emergent green growth. Some fields not yet tilled.

This set of phenological conditions is relatively favorable for interpretation of forests and related natural vegetation. Conditions also favor interpretation of grasses as a group, but separation of species is difficult because many appear similar in early stages of development. Likewise, separation of small grains from grasses would be expected to be difficult. Fields destined for cultivation of row crops would appear as bare soil if tilled, or possibly sparse grass/forb if not yet tilled. Therefore, different species of row crops are not detectable at this data.

General detectability of features by film type

PAN film: Roads show well. Water bodies are difficult to see. Field boundaries are distinguishable.

B & W IR film: Roads show poorly. Water bodies show well. Field boundaries are difficult to distinguish.

Conventional color: Roads show well. Water bodies show poorly. Field boundaries show fairly well. Two of the duplicate strips for this film-filter combination are quite dark. The lighter duplicates are much more easily interpretable.

Color IR film: Roads show fairly well. Water bodies show clearly. Field boundaries show fairly well. As with the conventional color, some of the duplicates are quite dark and consequently difficult to interpret. Even the lighter CIR strips, however, do not seem to have definition equal to that of the conventional color.